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April 11, 2019

PG&E Letter DCL-19-030 10 CFR 50.73

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Docket No. 50-323, OL-DPR-82
Diablo Canyon Power Plant, Unit 2
Licensee Event Report 2-2018-001-01, Automatic Reactor Trip of Unit 2 Following a Load Rejection

Reference: PG&E Letter DCL-19-007, "Licensee Event Report 2-2018-001-00, Automatic Reactor Trip of Unit 2 Following a Load Rejection," dated January 30, 2019 (ADAMS Accession No. ML19030B857)

Dear Commissioners and Staff:

In the above reference, Pacific Gas and Electric Company (PG&E) submitted a Licensee Event Report (LER) regarding an automatic reactor trip of Diablo Canyon Power Plant (DCPP) Unit 2 that occurred on December 1, 2018. In the LER, PG&E indicated that it would provide a supplemental LER following completion of the Root Cause Evaluation. PG&E hereby submits the enclosed supplemental LER.

This supplemental LER provides an updated event cause and corrective action summary based on the completed Root Cause Evaluation.

PG&E makes no new or revised regulatory commitments (as defined by NEI 99-04) in this report. All corrective actions identified in this letter will be implemented in accordance with the DCPP Corrective Action Program.

This event did not adversely affect the health and safety of the public.

Sincerely,

James M. Welsch

dqmg/6192/51006788-34
Enclosure
cc/enc: Scott A. Morris, NRC Region IV Administrator
Christopher W. Newport, NRC Senior Resident Inspector
Balwant K. Singal, NRR Senior Project Manager
Diablo Distribution

NRC FORM 366
(04-2018)

U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

(See Page 2 for required number of digits/characters for each block)

(See NUREG-1022, R.3 for instruction and guidance for completing this form
http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/)

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 03/31/2020

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Information Services Branch (T-2 F43), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

1. Facility Name	2. Docket Number	3. Page
Diablo Canyon Power Plant, Unit 2	05000 323	1 OF 4

4. Title

Automatic Reactor Trip of Unit 2 Following a Load Rejection

5. Event Date			6. LER Number			7. Report Date			8. Other Facilities Involved	
Month	Day	Year	Year	Sequential Number	Rev No.	Month	Day	Year	Facility Name	Docket Number
										05000
12	01	2018	2018	001	01	04	11	2019	Facility Name	Docket Number 05000

9. Operating Mode	11. This Report is Submitted Pursuant to the Requirements of 10 CFR §: *(Check all that apply)*			
1	☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
	☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
	☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
	☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☑ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
10. Power Level	☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
100	☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
	☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(C)	☐ 73.77(a)(1)
	☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(D)	☐ 73.77(a)(2)(i)
	☐ 20.2203(a)(2)(vi)	☐ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(vii)	☐ 73.77(a)(2)(ii)
		☐ 50.73(a)(2)(i)(C)	☐ Other (Specify in Abstract below or in NRC Form 366A)	

12. Licensee Contact for this LER

Licensee Contact	Telephone Number (Include Area Code)
David Madsen	805-545-6192

13. Complete One Line for each Component Failure Described in this Report

Cause	System	Component	Manufacturer	Reportable to ICES	Cause	System	Component	Manufacturer	Reportable to ICES
C	FK			No					

14. Supplemental Report Expected	15. Expected Submission Date	Month	Day	Year
☐ Yes (If yes, complete 15. Expected Submission Date) ☑ No				

Abstract (Limit to 1400 spaces, i.e., approximately 14 single-spaced typewritten lines)

On December 1, 2018, at 1006 PST, with Unit 2 at 100 percent power, the reactor automatically tripped following a load rejection from the 500 kV off site electrical system. The trip was not complex; all safety systems responded as designed. Due to the Unit 2 reactor trip and the expected actuation of the Auxiliary Feedwater System, this event is being reported per 10 CFR 50.73(a)(2)(iv)(A).

This event was a result of an automatic operation of the Diablo Canyon Special Protection Scheme (DC-SPS) that occurred when DC-SPS sensed two out of three 500 kV lines out of service when all three lines were in service. The DC-SPS Remote Outage Detection (ROD) logic used local current, independent of breaker position, for detecting a remote-end outage to determine if 500k kV lines were in service.

The ROD logic portion of the DC-SPS circuitry has been disabled and mitigation measures have been implemented, including improved communications with the Grid Control Center.

There was no impact on the health and safety of the public or plant personnel.

LICENSEE EVENT REPORT (LER) CONTINUATION SHEET

(See NUREG-1022, R.3 for instruction and guidance for completing this form http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/)

1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Diablo Canyon Power Plant, Unit 2	05000-323	2018	- 001	- 01

NARRATIVE

I. Reportable Event Classification

This event is reportable pursuant to 10 CFR 50.73(a)(2)(iv)(A) as an event or condition that resulted in manual or automatic actuation of any of the systems listed in paragraph (a)(2)(iv)(B).

II. Plant Conditions

At the time of the event, Diablo Canyon Power Plant (DCPP) Unit 2 was in Mode 1 (Power Operation), operating at 100 percent power. Following the event, DCPP Unit 2 was in Mode 3 (Hot Standby). DCPP Unit 1 was in Mode 1, operating at approximately 69 percent power at the time of the event.

III. Problem Description

A. Background

DCPP is interconnected to the Pacific Gas and Electric Company (PG&E) electric grid system via two 230 kV [FK] transmission lines emanating from their respective switchyards. The preferred power supply consists of the two independent circuits (230 kV and 500 kV) from the PG&E transmission networks. The 500 kV transmission lines out from the 500 kV switchyard provide for transmission of the plant's electric power output to the PG&E grid.

The three 500 kV transmission lines, one from the Gates Substation and two from the Midway Substation, feed the DCPP 500 kV switchyard.

Each 500 kV line between the 500 kV switchyard and a generator step-up transformer bank is provided with redundant current differential protection channels. Directional over-current relays are available as backup. A Diablo Canyon Special Protection Scheme (DC-SPS) supplements the existing DCPP 500 kV switchyard/line protection.

The DC-SPS was added in 2006 to supplement the existing DCPP 500 kV switchyard/line protection. This DC-SPS was designed and installed by PG&E's transmission organization. The DC-SPS is designed to detect abnormal grid conditions and take preplanned, corrective action to provide acceptable grid performance.

The switchyard DC-SPS was installed to mitigate the potential loss of two units in response to the occurrence of certain 500 kV grid events. These events, if left unmitigated, would result in the loss of both DCPP units. The DC-SPS system will selectively open 500 kV switchyard breakers associated with one generating unit (i.e., load rejection) when predefined conditions occur on the 500 kV offsite electrical distribution system.

B. Event Description

On December 1, 2018, at 1006 PST, DCPP Unit 2 tripped [AB][RCT] from 100 percent power following a load rejection out from the 500 kV offsite electrical system. This event was a result of operation of the DC-SPS. The DC-SPS sensed two out of three 500 kV lines out of service when all three lines were in service. This event occurred while Unit 1 was decreasing power to 50 percent power, which reduced the Diablo-Midway #2 and #3 500 kV line amperage flows below the DC-SPS Remote Outage Detection (ROD) logic trigger level, concurrent with the output of DCPP above the arming level setpoint of DC-SPS. The DC-SPS trip occurred without any preliminary indications to DCPP, and the DC-SPS has been in service since 2006 without any prior actuations.

NARRATIVE

C. Status of Inoperable Structures, Systems or Components that Contributed to the Event

There were no inoperable structures, systems or components that contributed to the event.

D. Other Systems or Secondary Systems Affected

None.

E. Method of Discovery

The event was immediately apparent to plant operators due to alarms and indications associated with the load rejection received in the control room.

F. Operator Actions

Control room personnel responded in accordance with established procedures, confirmed the reactor trip, verified proper engineered safety feature actuations, and stabilized the unit in Mode 3.

G. Safety System Responses

The trip was not complex; all safety systems responded as designed.

IV. Cause of the Problem

The DCPP Unit 2 trip was caused by the automatic actuation of the DC-SPS that occurred when DC-SPS sensed two out of three 500 kV lines out of service when all three lines were in service. The DC-SPS ROD logic used local current, independent of breaker position, for detecting a remote-end outage to determine if 500k kV lines were in service.

V. Assessment of Safety Consequences

There were no safety consequences as a result of this event. The Operations crew responded to the event in accordance with plant operating procedures. Equipment necessary for Unit 2 decay heat removal was available and operated as required by plant design. Unit 1 was not affected by this event. There was no impact on the health and safety of the public or plant personnel.

LICENSEE EVENT REPORT (LER) CONTINUATION SHEET

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1. FACILITY NAME	2. DOCKET NUMBER		3. LER NUMBER		
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Diablo Canyon Power Plant, Unit 2	05000-	323	2018	- 001	- 01

NARRATIVE

VI. Corrective Actions

The ROD logic portion of the DC-SPS circuitry has been disabled and mitigation measures have been implemented, including improved communications with the Grid Control Center. In addition, PG&E Transmission Operations, in partnership with DCPP, is redesigning the ROD logic of the DC-SPS.